

SDSFIE/FMSFIE SQL Generator

Overview

The **SDSFIE/FMSFIE** Generator is the 32-bit companion product to the SDSFIE/FMSFIE Browser, designed specifically for Windows 95/98 and Windows NT. In addition to providing increased speed of SQL generation, it offers a wider variety of generation options, as well as the capability to preview generated code and the ability to produce direct printed output as well as file output. The generator builds SDSFIE data sets in three phases. Each is capable of building the entire standard as well as some specific options permitting custom use. The specific capabilities provided in this release of the software include:

- 1] Change to SDSFIE/FMSFIE** - The SDSFIE/FMSFIE has been changed to the Spatial Data Standards/Facility Management Standards (for Facilities, Infrastructure, and the Environment.)
- 2] Removal of Microsoft Access from the SQL Generator.** A new product has been introduced specifically for Microsoft Access.

SDSFIE/FMSFIE Generator Main Screen Layout

The Main Screen Layout of the SDSFIE/FMSFIE Generator contains the Main Menu and the Main Generation Status Bar Information. All other screens in the Generator will be displayed within the context of the Main Screen, so that access to the Menu and Main Generation Status Bar is continuous.

For information on the Main Menu of the SDSFIE/FMSFIE Generator, see [Main Menu Operations](#).

The Main Generation Status Bar contains Four Panels, in much the same way as the SDSFIE/FMSFIE Browser.

A] Connection Status --The panel on the left continually displays the connection status to the SDSFIE/FMSFIE Data Library. If the library is present and properly connected, the panel should display the connection as well as the Release Number of the current connection.

B] RDBMS Generation Option --The second panel from the left displays the RDBMS Option currently configured for generation. In general, this only impacts the configuration of Attribute Data Types, since these vary from database management system to system.

C] GIS Generation Option --The second panel from the right displays the GIS Option currently configured for generation. This option controls the actual configuration of generated SQL. For example, if MGE is selected, the generated SQL will contain entries required of the various 'CATALOG' tables within MGE.

D] Default Printer --The panel all the way on the right displays the currently configured Windows default printer. This is the printer which will be used for output of printed SQL from the SDSFIE/FMSFIE Generator.

NOTE: Double Clicking on a Panel activates that portion of configuration/options which allow the user to directly modify the contents of the Panel.

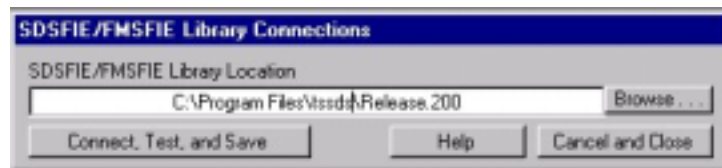
SDSFIE/FMSFIE Database Connections

The operation of the SDSFIE/FMSFIE Database requires a data source path and a single data output path. The data source path is to the actual data libraries (Microsoft ACCESS Databases *.mda). Within the installation of the Generator, the default path for this files is:

Application Path -> Release._._ (three digit expression i.e. Release.175 for TSSDS Release 1.750, Release.180 for TSSDS Release 1.800.)for the ACCESS Database Files

The .175 extension indicates that the data is associated with the Release 1.750 of the TSSDS. Subsequent releases of revised SDS content will similarly reflect these directory structures.

NOTE: The SDSFIE/FMSFIE Browser uses the same library data connection algorithm as the Generator. Therefore, if the Browser has successfully connected to the SDSFIE data libraries, no further action should normally be required for the Generator.



The Generator will normally successfully connect with the last correctly connected library. Subsequent determination of the applicable data source path can be accomplished using the Master Menu **Configure->Connect** selection. This screen offers the path to connect to the applicable data sources required for operation. The Test Connect and Save Button will attempt to connect to the indicated data source. Any problems with the connection will result in an error message. See [Problems Connecting to a Library Database](#).

Since the SDSFIE Data Source connection is independently configurable, it may be accessed via a Local Area Network (LAN). See [Network Operations](#) for additional information on configuring the SDSFIE/FMSFIE Generator for Client/Server operations using a network.

Buttons:

The **Browse Button** activates the dialog box for 'Select Path to Database'.

The **Connect, Test, and Save Button** attempts to connect to the applicable data source.

The **Help Button** activates Help for the SDSFIE/FMSFIE Database Connections Screen.

The **Cancel and Close Button** cancels any modifications made to the Library Database Path Source.

Options

Setting the Generator Options - This menu option provides the capability to set or configure the application to the specific needs of the user. There are in general, four types of options. The first option defines the ASCII Output File Path and Name. The second and third options provide some flexibility in the behavior of the application.

Screen Operation - This screen allows the user to set options for Output Files, Display Options and Printing Limits. Each category displays a 'tabbed region' where the options are set.

Setting the ASCII Output File Path and Default Output File Name ---- See [Generation Options - Output](#)

Configuring the display of the Tips or Hints for Buttons and Fields ---- [See Generation Options - Display](#)

Specify Maximums for Preview Lines and Printed Output Pages ---- See [Generation Options - Limits](#)

Buttons

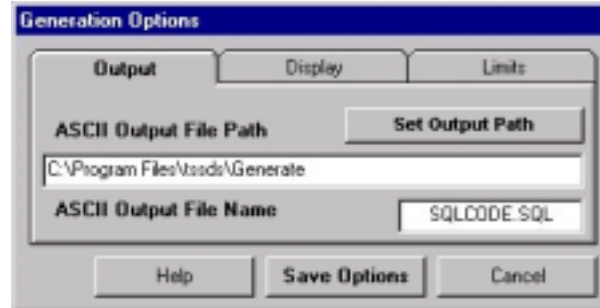
The **Help Button** activates help for the Options Screen.

The **Save Options Button** sets the chosen options and closes the Options Screen. The Save Options Button saves all options, not just the options from the visible tabbed region.

The **Cancel Button** cancels any modifications made to the options.

Generation Options - Output

The Generation Options set allows the user to configure the behavior of the Generator. In **Configure -> Options -> Output** the user can configure the Path and Name for the ASCII Output file. This is the default path where the ASCII SQL files will be placed.



The Output File Path may be set using either the Set Output Path Button or by typing the path in the text box directly. Using the Set Output Path button helps to ensure that the path is valid. The Set Output Path Button displays the 'Select Path to Generate SQL Dialog'. This dialog is similar to all other directory navigating dialogs except that it also contains a button for adding a subdirectory directly from the dialog. These dialogs are used to easily enter directory/sub-directory information without the need to enter lengthy paths.

All of these dialogs are modal, meaning that no other action can be performed until the dialog has been closed, either through Cancel or Ok.

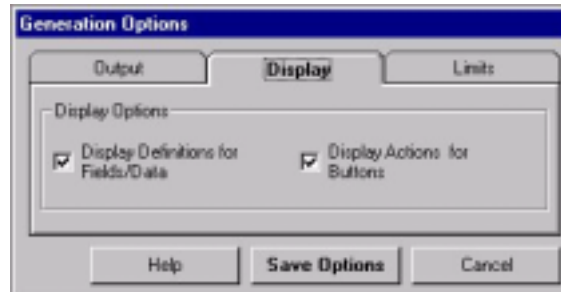
The ASCII Output File Name is input directly into the field box.

Buttons -

The **Set Output Path Button** activates the dialog box for 'Select Path to output SQL'

Generation Options - Display

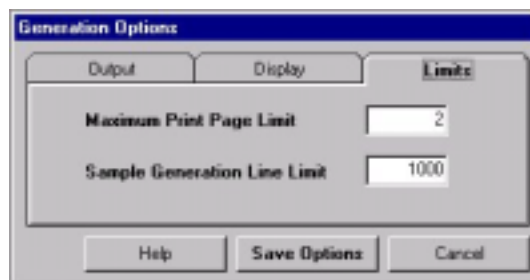
The Generation Options allow the user to configure the behavior of the Generator. In **Configure Options-> Display**, the user can configure whether or not tips (small, pop-up windows providing additional information) are displayed for fields and buttons.



Generation Options - Limits

The Generation Options set allows the user to configure the behavior of the Generator. In **Configure -> Options -> Limits** the user can configure the Maximum Print Page Limit and the Sample Generation Line Limit.

The SDSFIE/FMSFIE Generator permits output in three ways. The primary output mechanism is to an ASCII SQL File which can be used to batch process the generation of a database. But the Generator also permits 'previewing' code in two distinct ways. The first is by displaying the generated SQL code in a scrollable window on the screen. Since some generation may be in the 'thousands of lines of SQL', the 'Sample Generation Line Limit' specifies the maximum number of lines displayed in the window. The other options for output is directly to the designated default printer. The 'Maximum Print Page Limit' specifies the maximum number of pages which will be directly output to the printer.

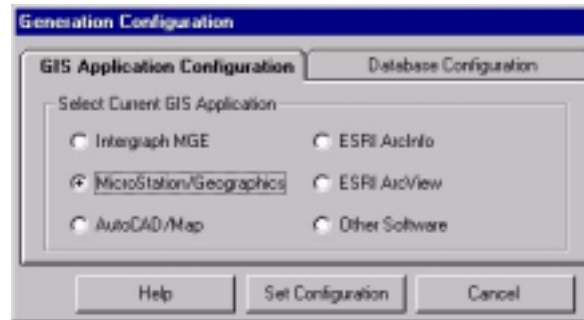


Generation Configuration - GIS Application

The **Configure -> Configuration -> GIS** Software set provides the options for various GIS software suites. Selecting these suites tailors the displays in various portions of the Generator. As an example, selecting from either ArcInfo or ArcView displays information on coverage names specified in the SDSFIE. Selecting a CADD product, on the other hand, displays

the file names and level numbers specified in the SDSFIE. These selections are in the form of option buttons, where only one button may be selected at a time.

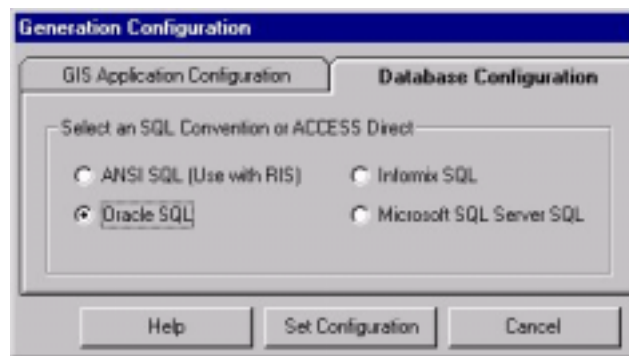
Note: The selected GIS Application Configuration is constantly displayed in the Generation Status Bar at the bottom of the Main Screen



Generation Configuration - RDBMS

The **Configure -> Configuration -> Database** set provides the options for the selection of various SQL Conventions. Selecting these suites tailors the displays in various portions of the Generator. These selections are in the form of Option buttons where only one selection is permitted at a time.

Note: The currently selected RDBMS is constantly displayed in the Generation Status Bar at the bottom of the Main Screen.



Buttons -

The **Help Button** activates Help for the Generation Configuration Database Screen.

The **Set Configuration Button** sets the chosen configuration and closes the Generation Configuration Screen.

The **Cancel Button** cancels any modifications made to the Generation Configuration Database.

Building a SDSFIE/FMSFIE Database

One of the primary purposes of the SDSFIE/FMSFIE Generator is to provide some flexibility in the building of SDSFIE/FMSFIE compliant databases. This generation occurs in three separate steps. These include:

Step 1 - Generating Tables and Attributes

The first step in the construction of a SDSFIE/FMSFIE database using the SDSFIE/FMSFIE Generator is to construct the desired data tables. Specifically how this is done is a function of the target database. For ANSI (RIS), Oracle, and Informix, this means constructing a SQL scripts which can then be run into an ISQL such as Oracles's SQL Plus or RIS Batch (see the CADD/GIS Technology Center Web Site for details on building an MGE Project using the Generator).

Once the Generator has been properly configured, select **Generate -> New -> Tables and Attributes**. This option displays the Tables and Attributes Generation Screen. Select the generation option using the option radio buttons, select the Sets, Classes, or Filters, configure the Output File, and click the **GENERATE** button.

Step 2 - Generating Domains and Values

The next step in the construction of a SDSFIE/FMSFIE database using the Generator is to construct the domains and values. There are fundamentally two separate techniques for accomplishing this depending on the target database. For SQL based systems, (Oracle, Informix, etc), the Generator produces scripts which build and populate the List Domain Values into Domain Tables.

One of the distinct advantages of using the Generator for this generation is that domains and values may be constructed for only the Table and Attributes which have previously been constructed. This reduces the size of the target database and yet ensures that the required domains are included. The Generator software performs this determination automatically, if these options are selected. Select **Generate -> New -> Domains and Values** to display the Domains and Values Generation Screen for SQL based systems.

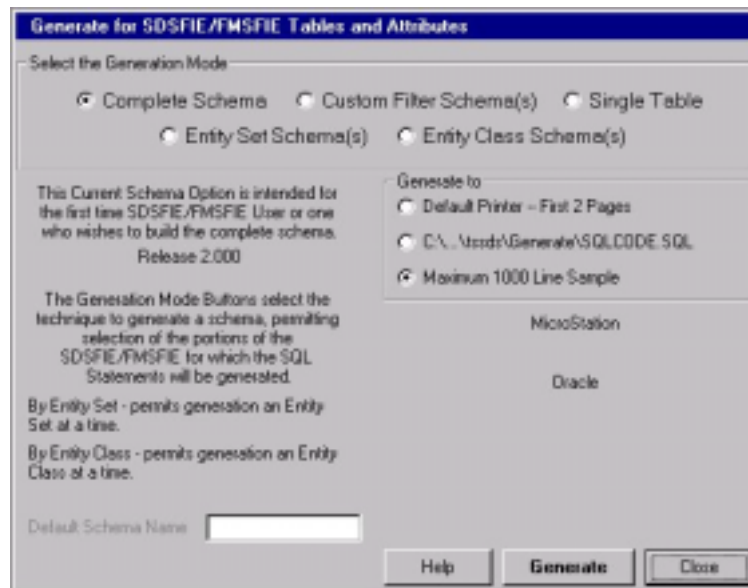
Step 3 - Generating Joins

In most cases, Joins are not required for performance of the database. For the disciplined user who wishes to enforce Referential Integrity on the database (or to populate MGE Joins Relations tables), the Generator may produce scripts which build these relationships within a database. Only sophisticated DBA's should incorporate joins in the database since they tend to limit the flexibility of users. Select **Generate -> New -> Joins** to display the Joins Generation Screen for SQL based systems.

Generation of Tables and Attributes

The first step in generating a complete SDSFIE/FMSFIE Schema is to build the tables and attributes which become a fundamental part of the relational database structure. The Generate for SDSFIE/FMSFIE Tables and Attributes Screen offers the capability to generate the code which, when input to the RDBMS, will create the SDS Database Structure using SQL. This application is not one to be taken lightly, and should only be accomplished by someone familiar with both the concept of the SDSFIE, and a thorough knowledge of the target relational DBMS and its application of SQL.

This screen can be activated with the Menu **Generate-> Tables and Attributes** selection.



The primary generation alternative is the **Complete Schema**. This alternative will produce output which is capable of creating all of the tables and attributes required to support the current Release of the SDSFIE/FMSFIE. See [Output Alternatives](#) for more information. During the generation, the program will display a 'progress bar' assuming the generation is being output to a file, which indicates that code is still being generated. Due to the current size of the SDSFIE, complete generation of the SQL, may take several minutes.

The second generation alternative is to tailor the output based on some combination of **Entity Sets** and/or **Entity Classes**. When either of these Option Buttons is selected, a generation List Box appears on the screen along with a complete list of either Sets or Classes depending on the alternative selected. Any combination of Sets or Classes may be placed in the Generation List Box either by double clicking on the selection or by using the **Add Element** or **Delete Element** Button. The program will automatically compensate to ensure that there is complete reconciliation between Entity Sets and Entity Classes.

When the contents of the Generation List on the left specifies the desired collection of Sets and Classes, the **Generation Button** will commence the generation. The Output Options To Default Printer/To Sample Display will not clear the generation list. Output to an ASCII SQL will clear the List Box.

The third generation alternative is to tailor the output based on a discipline or disciplines. When this Option Button is selected, a generation List Box appears on the screen along with a complete list of Filters. Any Combination of Filters may be placed in the Generation List Box either by double clicking on the selection or by using the **Add Element** or **Delete Element** Button.

The fourth generation alternative is to tailor the output based on a single table or tables. When this Option Button is selected, a generation List Box appears on the screen along with a

complete list of SDSFIE/FMSFIE Tables. Any Combination of Tables may be placed in the Generation List Box either by double clicking on the selection or by using the **Add Element** or **Delete Element** Button.

When the contents of the Generation List on the left specifies the desired collection of Disciplines, the **Generation Button** will commence the generation. The Output Options To Default Printer/To Sample Display will not clear the generation list. Output to an ASCII SQL will clear the List Box.

Buttons -

The **Help Button** activates Helps for the Build Current Schema Screen.

The **Generate Button** generates the SQL for the selected elements.

The **Close Button** closes the Build Current Schema and returns operation to the Master Menu.

Only Visible for Generation By Entity Sets/By Entity Classes/Filters/Single Table

The **Add Element Button** adds the selected element to the Generation List.

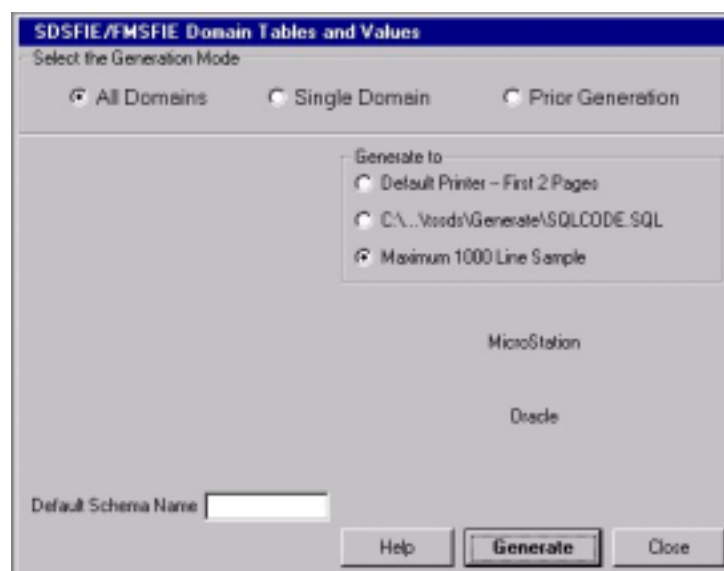
The **Delete Element Button** deletes the selected element from the Generation List.

Generation of Domains and Values for SQL Files

The second step in generating a complete SDSFIE/FMSFIE Schema is to build the domains and values which become a fundamental part of the relational database structure. The Generate for SDSFIE/FMSFIE Domains and Values Screen offers the capability to generate the code which, when input to the RDBMS, will create the SDSFIE/FMSFIE Database Structure using SQL.

This application is not one to be taken lightly, and should only be accomplished by someone familiar with both the concept of the SDSFIE, and a thorough knowledge of the target relational DBMS and its application of SQL.

This screen can be activated with the Menu **Generate-> Tables and Attributes** selection.



The primary generation alternative for an SQL File is the **All Domains Schema**. This alternative will produce output which is capable of creating all of the domains and values required to support the current Release of the SDSFIE. See [Output Alternatives](#) for more information. During the generation, the program displays a 'progress bar' which indicates that code is still being generated. Due to the current size of the SDSFIE/FMSFIE, complete generation of the SQL, may take several minutes.

The second generation alternative for an SQL File is to tailor the output based on some combination of individual or single domains. When this Option Button is selected, a generation List Box appears on the screen along with a complete list of domains. Any combination of domains may be placed in the Generation List Box either by double clicking on the selection or by using the **Add Domain** or **Delete Domain** Button.

The third generation alternative for an SQL File is to generate the output based on a prior generation of Tables and Attributes. This is accomplished through the use of the **Locate Generation SQL** Button. The user will be prompted to open the applicable SQL File, and a list of referenced domains will appear in the Generation List Box.

When the contents of the Generation List on the left specifies the desired collection of domains, the **Generation Button** will commence the generation. The user will first be prompted to select an output alternative. See [Output Alternatives](#). The Output Options To Default Printer/To Sample Display will not clear the generation list. Output to an ASCII SQL will clear the List Box.

Buttons -

The **Add Domain Button** adds the selected domain to the Generation List.

The **Delete Domain Button** deletes the selected domain from the Generation List.

The **Help Button** activates Helps for the Generation of Domain Tables and Values Screen.

The **Generate Button** generates the SQL for the selected domains.

The **Close Button** closes the Build Current Schema and returns operation to the Master Menu.

Generation of Joins/Table Relationships for SQL Files

The third step in generating a complete SDSFIE/FMSFIE Schema is to build the Joins and Table Relationships which become a fundamental part of the relational database structure. The Generate for SDSFIE/FMSFIE Joins/Table Relationships Screen offers the capability to generate the code which, when input to the RDBMS, will create the SDSFIE/FMSFIE Database Structure using SQL.

Relationships define the elements within one table that are "related" to elements in another table. In the SDSFIE/FMSFIE, this is accomplished using a Primary Key/Foreign Key relationship. These are called "Joins". To the extent possible, the SDSFIE/FMSFIE tries to make the attribute names the same, such that the Foreign Key attribute name is the same as the Primary Key name.

This helps to identify the relationship. Exceptions to this rule obviously include situations where there are two foreign key joins to a single primary key in the same table. The relationship of a valve to two pipes is an example of this.

The Relationship or Join element within the SDSFIE/FMSFIE defines these relationships. This table includes the Primary Key/Primary Table to Foreign Key/Joined Table relationship. In the generation of SQL, this is accomplished using the FOREIGN KEY ***** REFERENCES statement.

Note: Nothing in the logic of the generator software checks for the existence of the related table prior to the SQL generation. It is the users responsibility to know which tables have been generated to preclude SQL errors in the execution of the scripts.

This screen can be activated with the Menu **Generate-> Joins/Table Relationship** selection.



The primary generation alternative for an SQL File is the **All Joins Schema**. This alternative will produce output which is capable of creating all of the Joins/Table relationships required to support the current Release of the SDSFIE/FMSFIE. See [Output Alternatives](#) for more information. During the generation, the program displays a 'progress bar' which indicates that code is still being generated. Due to the current size of the SDSFIE/FMSFIE, complete generation of the SQL may take several minutes.

The second generation alternative for an SQL File is to tailor the output based on some combination of individual or single Tables. When this Option Button is selected, a generation List Box appears on the screen along with a complete list of Tables. Any combination of Tables may be placed in the Generation List Box either by double clicking on the selection or by using the **Add Table** or **Delete Table** Button.

The third generation alternative for an SQL File is to generate the output based on a prior generation of Tables and Attributes. This is accomplished through the use of the **Locate Generation SQL** Button. The user will be prompted to open the applicable SQL File, and a list of referenced Tables will appear in the Generation List Box.

When the contents of the Generation List on the left specifies the desired collection of Tables, the **Generation Button** will commence the generation. The user will first be prompted to select an output alternative. See [Output Alternatives](#). The Output Options To Default Printer/To Sample Display will not clear the generation list. Output to an ASCII SQL will clear the List Box.

Buttons -

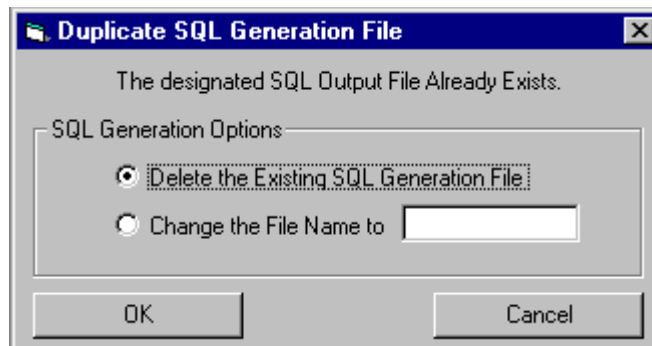
The **Help Button** activates Helps for the Generation of Domain Tables and Values Screen.

The **Generate Button** generates the SQL for the selected domains.

The **Close Button** closes the Build Current Schema and returns operation to the Master Menu.

Changing SQL Output File

The SDSFIE/FMSFIE Generator is configured to generate to the default SQL File configured in **Configure -> Options**; in addition the Generator also offers the capability to generate to an alternative file, to insure that previously generated code will not be overwritten. Upon activation of the **Generate** button, the user will be prompted to either delete the existing SQL Generation File (the default file) or change the File Name. Clicking OK confirms the selection and commences the selected generation.



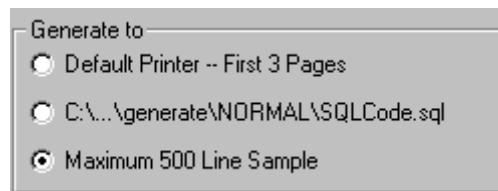
Buttons -

The **OK** button confirms the selected action and commences the selected generation.

The **Cancel** button cancels all actions and closes the dialog box .

Output Alternatives

The SDSFIE/FMSFIE Generator permits output of SQL Code in three different ways.



The first alternative is for output directly to the designated default printer. Printing operations are accomplished using the currently defined default printer. At program startup, the currently defined Windows Default Printer is displayed in the Generator Status bar at the bottom of the Master Screen. This SDSFIE/FMSFIE Generator Status bar is always visible and contains the name of the Default Printer in the lower right panel. Changing the Default Printer can be

accomplished in two ways. In the Master Menu, the **Configure ->Print Setup** selection displays a standard printer setup configuration dialog. In addition, double-clicking on the Default Printer Panel in the SDSFIE/FMSFIE Generator Status bar will also activate the printer setup configuration dialog. The 'Maximum Print Page Limit' specifies the maximum number of pages which will be directly output to the printer. This is configured from **Configure ->Options**. See [Generation Options - Limits](#) .

The second output generation alternative is directly to an ASCII SQL File which can be used to batch process the generation of a database. This is configured from **Configure ->Options**. See [Generation Options - Output-](#) See [Changing SQL Output File](#). Double clicking on the Output File name allows the user to specify an alternative output file name without changing the default file name. This insures that previously generate SQL Code will not be overwritten.

The Generator also permits the 'previewing' of code. By selecting Maximum Line Sample the generated SQL code is displayed in a scrollable window on the screen. Since some generation may be in the 'thousands of lines of SQL', the 'Sample Generation Line Limit' specifies the maximum number of lines displayed in the window. This is configured from **Configure ->Options**. See [Generation Options - Limits](#).

Getting Started with the SDSFIE/FMSFIE Generator

Because the SDSFIE/FMSFIE Generator offers such a wide variety of options and capabilities, new users are prompted for initial configuration through the use of the Configuration Wizard. The wizard provides a more structured way of setting all of the required elements within the SDSFIE/FMSFIE Generator which control its performance and operation.

Step 1 - Connecting to the SDSFIE/FMSFIE Database

At installation, users desiring stand alone operation will have the database loaded in a sub-directory of the Application Path (normally C:\Program Files\TSSDS). For the current release, this subdirectory is 'Release.___ ' (Three digit expression i.e. Release.175 for TSSDS Release 1.750, Release.180 for TSSDS Release 1.800 etc.). If the database has been properly loaded and the installation has completed normally, the required database files (TSSDSLIB.mda, TSSDSDOM.mda, TSSDSFET.mda, TSSDSNEW.mda, TSSDSCHG.mda, and TSSDSSYM.mda) will be placed in this subdirectory. See [Connecting to the SDSFIE/FMSFIE Library](#) and Client/Server Operations for additional details.

Step 2 - Selecting the Desired GIS Software

The SDSFIE/FMSFIE Generator alters the SQL Code based on the requirements of the GIS Application Software being used. As an example, selecting MGE causes the software to generate code to populate the MGE catalog tables which support its operation.

The user should select the Software suite normally used for GIS operations. It can be changed from the Master Menu by selecting **Configure -> Configuration - GIS**.

Step 3 - Specifying the Target Database

The SDSFIE/FMSFIE Generator produces SQL Code specifically intended for use with a target Relational Database Management System (RDBMS). Select the RDBMS which defines the architecture for the SDS/FMS database. It can be changed from the Master Menu by selecting **Configure -> Configuration -> RDBMS**.

Step 4 - Configuring Display Options

To assist in initial familiarization with the SDSFIE/FMSFIE Generator, various Tips or Hints are attached to fields and buttons on each of the Screens. While some users may find these Tips helpful, others may find them an unnecessary distraction. The two displayed check boxes determine the configuration of the display of these Tips.

Placing a ☐ in the small box turns on the Tips for Buttons, Fields, or both. It is recommended that these Tips initially be turned on, since this will help with familiarizing the user with the general operation of the Generator. Later, these Tips can be turned off using **Configure -> Options -> Display-**

Step 5 - Configuring the Output File Path -

The SDSFIE/FMSFIE Generator has the capability to output to ASCII Files. It is also possible here to configure a default directory where output to files will be placed. See **Creating ASCII files** for details on this output. If no directory is specified, the default is the Application Path + "\Generate". This empty directory was created during installation of the SDSFIE/FMSFIE Generator. The **Set Default Output Path** Button displays a directory browsing screen to view the actual directory tree. Later, these paths can be changed using **Configure ->Options -Output**

Step 6 - Defining the Default Output Type

The SDSFIE/FMSFIE Generator offers three output alternatives. These include a sample output generated to the screen, to the specified default printer, or complete output to an ASCII File which can then be used for ISQL or other interactive operations into the database. See **Setting the Default Printer**. The selection defined here can be easily changed during the Generator operations on each of the Generation Screens. See [Output Alternatives](#) for further information.

Step 7 - Generate Desired SQL Modification

Once the software has been configured, these configuration settings are saved for each subsequent startup of the Generator. The three fundamental functions of the software include:

- 1 - Building a new SDSFIE/FMSFIE Database or a portion of a SDSFIE/FMSFIE Database (See [Building Tables and Attributes](#))
- 2 - Analyzing a SDSFIE/FMSFIE Database for compliance with the SDSFIE/FMSFIE (any version) (See [Diagnostics Steps](#))
- 3 - Upgrading a SDSFIE/FMSFIE Database from one version to a subsequent version (See [Upgrade Steps](#))

Evaluating a SDSFIE/FMSFIE Database

Another function of the SDSFIE/FMSFIE Generator is to assist with evaluating the level of compliance of a user database with the SDSFIE/FMSFIE. This function requires that the user have some understanding of the contents of the database as well as the target SDSFIE/FMSFIE Release required.

NOTE: The SDSFIE/FMSFIE Generator makes the assumption that a database is nearly compliant with some version of the SDSFIE/FMSFIE. Databases which are not based on the SDSFIE/FMSFIE at all will find the user of the Evaluation tools for diagnostics purposes of limited value.

Step 1 - Performing SDSFIE/FMSFIE Diagnostics

Once the Generator has been properly configured, select **Generate -> Diagnostics** to display the Diagnostics Screen.

NOTE: This menu item is only activated if a good SDSFIE/FMSFIE Connection to the TSSDSCHG.mdb database has been established. If the Menu Item is greyed, check for the existence of the file in the directory where the remainder of the Library databases reside. If it exists, then shut down the generator and restart the generator. In most cases, this fixes the problem. If the Menu Item is still greyed, contact the CADD/GIS Technology Center

Upgrading a SDSFIE/FMSFIE Database

Another function of the SDSFIE/FMSFIE Generator is to assist with the upgrading of a SDSFIE/FMSFIE compliant (or reasonably compliant) database from one release to another. Again, since the scripts produced actually modify the contents of the database, they should only be used by a DBA who is familiar with the structure and content of both the SDSFIE/FMSFIE and the local database.

NOTE: The SDSFIE/FMSFIE Generator makes the assumption that a database is nearly compliant with some version of the SDSFIE/FMSFIE. Databases which are not based on the SDSFIE/FMSFIE at all will find the user of the Evaluation tools for diagnostics purposes of limited value. These databases may actually be *harm*ed by applying the scripts produced by the Generator.

Step 1 - Upgrading from one SDSFIE Release to the next

Once the Generator has been properly configured, select **Generate -> Upgrades** to display the Database Upgrade Screen.

Network Operations

The SDSFIE continues to grow in both size and complexity. As a result, it may be advantageous to place the SDS source data files on a separate network server and just retain the

SDSFIE/FMSFIE Generator (and SDSFIE/FMSFIE Browser) Applications on the local machine. In this sense the SDSFIE/FMSFIE Application set can operate as a Client/Server application, accessing data remotely across a Local Area Network.

For configuring the SDSFIE/FMSFIE Generator for network operations, the installation should be run to install only the application TSSDSGEN.exe, TSSDSGEN.hlp/.cnt and related files to the local machine. This can be accomplished by copying these files to the SDSFIE Browser Directory. If the SDSFIE Browser has not been installed, the installation should be run but there is no need for Symbology and Models files.

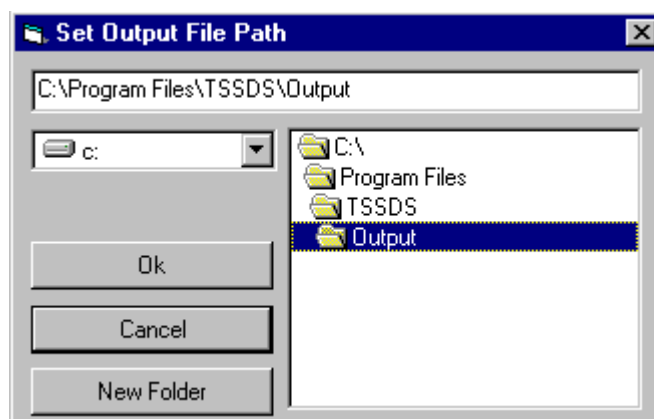
At the same time, the system or network administrator should create a master SDS directory on the server;e.g. TSSDS. Under this directory should be the SDS Data sub-directory. This is best named RELEASE._ _ _ (Three digit expression for the desired version i.e. Release.175 for TSSDS Release 1.750 , Release.180 for TSSDS Release 1.800 etc.). This will assist the network administrator and user to connect to the appropriate directories to access the data.

Following installation of the SDSFIE/FMSFIE Generator application, the user can connect to this remote data sources by 'Mapping' a Network Drive (assigning a Drive Letter) to the server, preferably to the shared SDS directory. The appropriate data source can be connected using the Master Menu SDSFIE/FMSFIE->**Connect** selection. See [Setting Paths in the SDS](#)

As long as the network is available, the SDSFIE should display '*CONNECTED*' and the '*SDS Release #*' in the lower left panels of the status bar.

Setting the Default Output File Path

The Output File Path is set using the Output File Path Dialog. This dialog is similar to all other directory navigating dialogs except that it also contains a button for adding a subdirectory directly from the dialog. These dialogs are used to easily enter directory/sub-directory information without the need for enter lengthy paths.



All of these dialogs are modal, meaning that no other action can be performed until the dialog has been closed, either through Cancel or Ok. A sample of the dialog appears above.

Master Menu Operations

Configure -

Connect - This connects, tests, and saves the paths for the SDS Access Database location. See [SDSFIE/FMSFIE Database Connections](#)

Options - This sets options for ASCII Output, Display Options, and Printing Limits. See Generation Options.

Configuration - This sets the configuration options for GIS Software Location. See [Generation Configuration - GIS](#)

Print Setup - This sets the default printer.

Generate -

New - This menu option controls the generation of a SDSFIE/FMSFIE Database Structure using SQL.

Tables and Attributes - Generates the SQL codes for the selected schema . See [Generation of Tables and Attributes](#)

Domain Tables and Values - Generates the SQL codes for the selected Domain Tables. See [Generation of Domain Tables and Values](#).

Relationships - Generates the SQL codes for the selected Joins/Table Relations. See [Generation of Joins/Table Relationships](#)

Diagnostics -This menu option allows the user to generate SQL Scripts to perform two specific functions. The first is to examine the impact of SDSFIE/FMSFIE deletions by determining the occurrences of those elements which have been deleted. The second is to perform some statistical analysis on the dataset to give the Data Base Administrator additional understanding of the contents of the database relative to the current (or some selected) release of the SDSFIE/FMSFIE. See [SDSFIE/FMSFIE Database Diagnostics](#).

NOTE: This menu item is only activated if a good SDSFIE/FMSFIE Connection to the TSSDSCHG.mdb database has been established. If the Menu Item is greyed, check for the existence of the file in the directory where the remainder of the Library databases reside. If it exists, then shut down the generator and restart the generator. In most cases, this fixes the problem. If the Menu Item is still greyed, contact the CADD/GIS Technology Center

Release Upgrades -This menu option allows the user to generate SQL Scripts based on the changes occurring in the SDSFIE/FMSFIE from Release to Release. This assists in the maintenance of user databases and facilitates the compliance of these databases with the SDSFIE/FMSFIE. See [SDSFIE/FMSFIE Release Upgrades](#).

Help -

About the Generator - Details information about the SDSFIE/FMSFIE Generator as to the developer and version number.

Contents - Provides a table of contents for the SDSFIE/FMSFIE Generator Help File.

What's New - Provides information about the new or improved capabilities of the SDSFIE/FMSFIE Generator.

Problems Connecting to a Library Database

From the Connection Screen, selecting the Test, Connect, and Save Button attempts to locate a valid Library Data source at the specified location. Specifically, the application looks for the database TSSDSLIB.mda and a table VERSION within that database. If this is found at the indicated location, the connection is made and recorded. The Version number in the database is read and subsequently used to validate that the appropriate Model and Symbol Paths **are of the same version** as the Database.

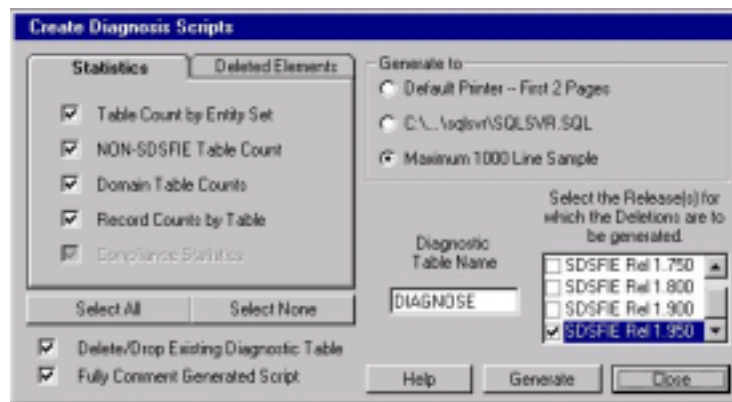
The Connection Screen will connect to any valid SDSFIE/FMSFIE Data Library. The complete libraries for Release 1.600 and Subsequent are available at the SDS Web Site and SDS CDROM. The libraries include:

TSSDSLIB.mda TSSSDSDOM.mda TSSDSFET.mda
TSSDSCHG.mda (SDS Generator/ToolBox Requirement Only)

The Table Layouts for the individual tables in the SDSFIE/FMSFIE libraries are also available on the SDS Web Site. The data library are normal Microsoft ACCESS Databases. They contain no special assignments, macros, or code. They are in Access 97 format.

SDSFIE/FMSFIE Database Diagnostics

If the selected target database is Oracle, ANSI, or Informix, the diagnostics menu option displays the screen below. This screen is used to build SQL scripts which assist in the understanding of the users database versus the current release of the SDSFIE/FMSFIE.



Statistic Checkboxes -

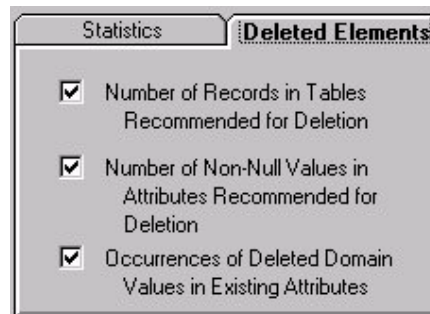
Table Count by Entity Set - Determines the number of tables (separated by SDSFIE/FMSFIE Entity Sets) which are present in the users database. As a part of this process, a table called TSSDSTBL is created which contains the current release tables present in the users database.

Non SDSFIE Table Count - Determines the number of tables which are present in the users database which are not currently a part of the users database. These counts include GIS system table requirements such as the FEATURE table in MGE.

Domain Table Counts - Determines the number of domain tables (those identified as beginning with d_) which are present in the users database. As a part of this process, a table called TSSDSDOM is created which contains the current release domain tables present in the users database.

Record Counts by Table - Determines the specific record counts in each of the valid SDSFIE/FMSFIE tables. This includes graphic as well as non-graphic tables.

Compliance Statistics - Determines degree to which the configuration of the users database complies with the configuration of the current release of the SDSFIE.



Deleted Elements Checkboxes -

Number of Records in Tables recommended for Deletion - Displays the number of records in the users database for each table which is designated to be deleted in the current release. This action does not actually generate the SQL to delete the tables, but rather to display/determine the number of records in those tables, if they exist.

Number of Non-Nulls Values in Attributes recommended for Deletion - Displays the number of records in the applicable tables within the users database containing non-null values for each attribute which is designated to be deleted in the current release. This action does not actually generate the SQL to remove the attributes from the tables, but rather to display/determine the number of records which will be impacted.

Occurrences of Deleted Domain Values in Existing Attributes - Displays the number of records in the applicable tables within the users database containing domain values which are designated to be deleted in the current release. This action does not actually generate the SQL to change or delete these values, but rather to display the records impacted by the value deletion.

Options -

Delete/Drop Existing Diagnostic Table - Checking this box causes the generated SQL to contain a DROP statement for the designated results, or diagnostic table name.

Fully Comment Generated Script - Checking this box causes additional comment to be generated which further explains the purpose and function of the code. For users not completely familiar with SQL or the SDSFIE/FMSFIE, this option may prove useful.

Generation Options -

Three Generation Options are available. See [Output Alternatives](#).

Release List Box -

The Release List Box contains the prior versions of the SDS/FMS and a check box for each version. These check boxes cause code to be generated for the examination of deleted elements. It is permissible to have multiple selections in this list box. NOTE: The contents of the list box does not impact the statistics generated, which are always against the currently connected database release (visible in the Lower Left Status Bar).

Diagnostic Table Name -

This field must contain the name of a database table where the results of the specific queries will be stored. While the field is required, the precise format of the name is a function of the RDBMS which is being used. The table is created using a CREATE TABLE statement building two fields; DESCRIPTION, where the entry or query description is stored, and OCCURRENCES, where the record or table count is stored

Buttons -

The **Help Button** activates Helps for the Diagnostics Screen.

The **Generate Button** generates the SQL for the selected diagnostics.

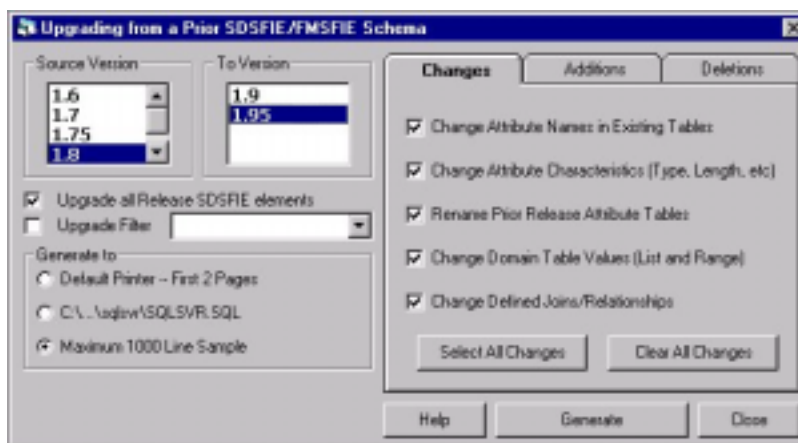
The **Close Button** closes the Diagnostics Screen and returns operation to the Master Menu.

The **Select All Button** selects all of the diagnostics options.

The **Select None Button** clears all of the diagnostics options.

SDSFIE/FMSFIE Release Upgrades

One of the more useful features of the SDSFIE/FMSFIE Generator is the Upgrades Screen. This screen generates SQL Scripts (or configures ACCESS Databases) based on the changes occurring in the SDS from Release to Release. This assists in the maintenance of user databases and facilitates the compliance of these databases with the SDSFIE/FMSFIE.



The Upgrade Screen is divided into several parts. The upper left portion contains the Release configuration selection section. This tells the application which changes to include in the modification set. The middle left, as with other generation screens, determines the output alternatives for generated code. The right (visible only once the Release configuration has been determined), allows users to select which types of modification will be addressed by the upgrade process. See [SDSFIE Upgrade..](#)

Generation Options -

Three Generation Options are available. See [Output Alternatives](#).

Buttons -

The **Help Button** activates help for the SDSFIE/FMSFIE Release Upgrade Screen.

The **Generate Button** generates the requested SQL Scripts.

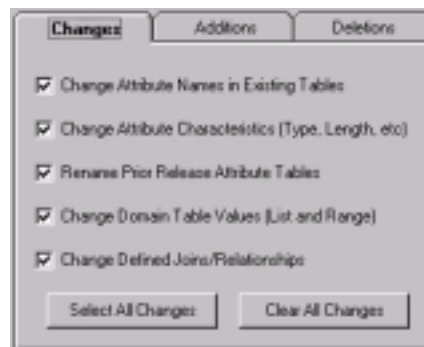
The **Close Button** closes the SDSFIE/FMSFIE Release Screen and returns to the Main Menu.

NOTE: UPGRADES to user databases should only be performed by qualified personnel who understand the implications of these changes and are authorized to modify the structure of databases. Severe consequences can occur including loss of costly data unless strict controls are maintained.

For ANSI, Oracle, and Informix, the upgrade process consists of SQL scripts which are interactively applied to the users dataset.

SDSFIE/FMSFIE Upgrades - Changes

The Changes Tab allows users to select which types of modification will be addressed by the upgrade process.



Upgrade Changes Checkboxes -

Change Attribute Names in Existing SDSFIE Tables - This selection generates the SQL to rename attributes which have been altered in the selected release of the SDS. In SQL, this is accomplished using an ALTER TABLE statement or, in the case of Oracle, a CREATE TABLE FROM statement.

Change Attribute Characteristics in SDSFIE Tables - This selection generates the SQL to change the data type or character length of attributes modified in the selected release of the SDS. In other RDBMS's, this should be done with care in order not to lose valuable information. In SQL, this is accomplished using an ALTER TABLE statement.

Rename SDSFIE Prior Release Attribute Tables - This selection generates SQL to rename tables modified in the current release of the SDS. In most cases, tables are renamed because of a

change in the Entity Class, which defines the first five characters in the table name. In SQL, this is accomplished using a RENAME TABLE statement.

Change Domain Table Values (List and Range) - This selection generates the SQL to change domain table values in the tables where they have been entered. These statements not only modify the value in the List Domain itself, but alter the values in attributes where they have been used. In SQL, this is accomplished using a UPDATE statement.

Change Defined Joins/Relationships - This selection generates SQL to change the CONSTRAINTS as defined in the Data Table Joins or Relationships. In SQL, this is accomplished using a ALTER TABLE statement.

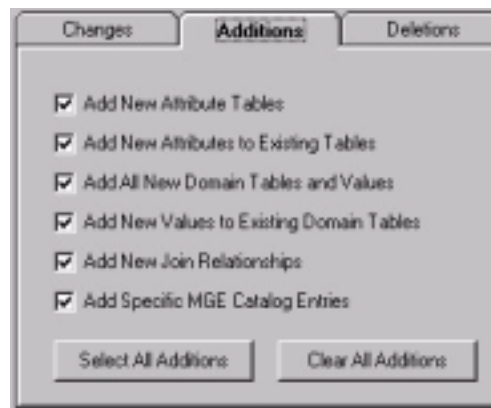
Buttons -

The **Select All Changes Button** selects all of the modification check boxes.

The **Clear All Changes Button** clears all of the modification check boxes.

SDSFIE/FMSFIE Upgrades - Additions

The SDSFIE/FMSFIE Additions Tab allows users to select which types of modification will be addressed by the upgrade process.



Upgrade Additions Checkboxes -

Add New Attribute Tables - This selection generates the SQL to add the tables and attributes which have been added to the SDS/FMS in the selected Release(s). In SQL, this consists of CREATE TABLE statements.

Add New Attributes to Existing Tables - This selection generates the SQL to add new attributes to existing SDSFIE/FMSFIE tables for those attributes added in the selected Release(s). All attributes are added at the end of the table structure. This ensures that the sequence of the attributes within a table are retained according to some standard. In SQL, this consists of ALTER TABLE statements.

Add All New Domain Tables and Values - This selection generates the SQL to build newly defined domain tables in the existing SDS/FMS for the desired Release(s).

Add New Values to Existing Domain Tables - This selection generates the SQL to add newly defined domain values to existing SDS/FMS domains for the desired Release(s).

Add New Join Relationships - This selection generates the SQL to add the new relationship constraints to the Foreign Key attributes in the SDS/FMS. These attributes are defined as _id references in the Joins Relations tables.

Add Specific MGE Catalog Entries - This selection generates the SQL to add new entities/maps to the FEATURE and other Intergraph MGE support tables within the database.

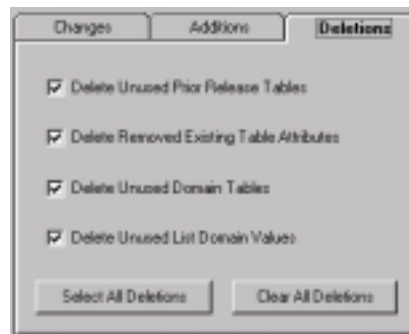
Buttons -

The **Select All Additions Button** selects all of the modification check boxes.

The **Clear All Additions Button** clears all of the modification check boxes.

SDSFIE/FMSFIE Upgrades - Deletions

The SDSFIE/FMSFIE Deletions Tab allows users to select which types of modification will be addressed by the upgrade process.



Upgrade Deletions Checkboxes -

Delete Unused SDSFIE/FMSFIES Prior Release Tables - This selection generates SQL delete tables removed from the current version of the SDSFIE/FMSFIE. In SQL, this is accomplished by using the DROP TABLE statement. It is recommended that the diagnostic be run first to determine the impact of deleting these tables.

Delete Removed SDSFIE/FMSFIES Existing Table Attributes - This selection generates SQL to delete attributes removed from the current version of the SDSFIE/FMSFIES. In SQL for Informix, this is accomplished by using the ALTER TABLE DROP statement. In other RDBMS, this requires the CREATE TABLE FROM statement. It is recommended that the diagnostic be run first to determine the impact of deleting these tables.

Delete Unused SDSFIE/FMSFIES Domain Tables - This selection generates SQL to delete domain tables removed in the current version of the SDSFIE/FMSFIES. If the value has not been replaced with a value from another domain table, the value is also removed. In SQL, this is done with a combination of DROP TABLE and UPDATE statements. It is recommended that the diagnostic be run first to determine the impact of deleting these tables.

Delete Unused SDSFIE/FMSFIES List Domain Values - This selection generates SQL to delete list domain values removed in the current version of the SDSFIE/FMSFIES. In SQL, this is accomplished using the UPDATE statement. It is recommended that the diagnostic be run first to determine the impact of deleting these values.

Buttons -

The **Select All Deletions Button** selects all of the modification check boxes.

The **Clear All Deletions Button** clears all of the modification check boxes.